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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jyri Paavola

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1966

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WARE FRESSOLA VAN DER SLUYS &
ADOLPHSON, LLP
BRADFORD GREEN BUILDING 5
755 MAIN STREET, P O BOX 224
MONROE, CT 06468

EXAMINER

HENN, TIMOTHY J

ART UNIT

PAPER NUMBER

2612

7

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/878,768

Applicant(s)

PAAVOLA ET AL.

Examiner

Timothy J Henn

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6,7,9,11,15,16,19,22,25,26 and 29 is/are rejected.
- 7) ☒ Claim(s) 3,5,8,10,12-14,17,18,20,21,23,24,27,28,30 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5,6.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. ***It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.***

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 16 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

[claim 16]

Claim 16 recites the limitation "the attached CCD cell". There is insufficient antecedent basis for this limitation in the claim. For the purposes of examination the limitation will be read as "the CCD cell".

[claim 19]

Claim 19 recites the limitation "the extensions of the fastening element". There is insufficient antecedent basis for this limitation in the claim. For the purposes of examination the limitation will be read as "the fastening element".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 6, 7 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Andrevski (US 4,591,901).

[claim 1]

In regard to claim 1, note that Andrevski discloses a joining construction (Figure 7a) for mounting CCD cells of a color Line camera in an aligned fashion on a color splitting prism, which is attached to a prism housing, said joining construction comprising: fastening elements (702) having a length substantially larger than the length of the CCD cell (712) and extending from a housing margin (206, 208) on one side of a light exit surface of said color splitting prism to another housing margin on the opposite side of said light exit surface (Figure 2); a first glue joint between the CCD cell and its fastening element (c. 5, ll. 1-26; c. 7, ll. 36-57); and third glue joints said fastening element and said margins of the housing (c. 5, ll. 1-26; c. 7, ll. 36-57).

[claim 2]

In regard to claim 2, note that Andrevski discloses extensions of the fastening element, which extensions extend along opposite sides of the housing (Figure 7a, Items 708).

[claim 6]

In regard to claim 6, note that Andrevski discloses fastening elements, wherein each fastening element includes front surfaces that are substantially parallel to the photosensitive surface of the CCD cell; at each exit surface said two housing margins are essentially parallel to said exit surface of the color splitting prism; and said front surfaces are supported against said housing margins (Figure 2, Figure 7a).

[claim 7]

In regard to claim 7, note that Andrevski discloses attaching the fastening element extensions by glue or "heat-insulating elements" to the prism housing (Figure 7a, c. 7, ll. 54-60).

[claim 15]

In regard to claim 15, note that Andrevski discloses a housing which is made of metal (c. 3, ll. 63-66).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4, 9, 11 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Andrevski (US 4,591,901).

[claim 4]

In regard to claim 4, Andrevski discloses all limitations except for a first glue with a heat transfer coefficient of at least 0.6 W/m-K. Official Notice is taken that it is well known in the art to mount CCD cells using glues with high heat transfer coefficients to aid in cooling the CCD cell. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a first glue with a heat transfer coefficient of at least 0.6 W/m-K.

[claim 9]

In regard to claim 9, note that Andrevski discloses all limitations except for a third glue with a heat transfer coefficient of no more than 0.3 W/m-K. Official Notice is taken that it is well known in the art to mount prisms using glues with low heat transfer coefficients to avoid problems caused by thermal expansion of the prism. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a third glue with a heat transfer coefficient of no more than 0.3 W/m-K.

[claim 11]

In regard to claim 11, note that Andrevski discloses all limitations except for a fastening element which is copper or aluminum or an alloy of either of these. Official Notice is taken that it is well known in the art to use copper, aluminum or alloys of these in construction of camera components for their heat distribution properties. Therefore, it

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would have been obvious to one of ordinary skill in the art at the time the invention was made to use copper, aluminum or an alloy of these to make the fastening element of Andrevski.

[claim 29]

In regard to claim 29, note that Andrevski discloses all limitations except for a fastening element which is copper or aluminum or an alloy of either of these. Official Notice is taken that it is well known in the art to use copper, aluminum or alloys of these in construction of camera components for their heat distribution properties. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use copper, aluminum or an alloy of these to make the fastening element of Andrevski.

8. Claims 16, 19, 22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heffington et al. (US 5,315,384) in view of Andrevski (US 4,561,901).

[claim 16]

In regard to claim 16, note that Heffington discloses a method for mounting CCD cells of a color line camera on a color splitting prism, the method of mounting each of the CCD cells onto said prism comprising the steps of: creating a thermally conductive surface contact between the CCD cell and a fastening element by joining them together with a first glue (c. 7, ll. 3-27); aligning the fastening element with the attached CCD cell at the correct position on said prism exit surface (c. 7, ll. 28-38); and gluing the fastening element, while maintaining the obtained alignment of the CCD cell, at least at

two front surfaces located in the area of its outer margins and having areas substantially smaller than the area of the CCD cell, with a third glue to the prism (c. 8, l. 14 - c. 9, l. 15). Therefore it can be seen that Heffington lacks a prism housing and a fastening element which is longer than the CCD cell.

Andrevski discloses a CCD mounting structure which includes a prism housing (Figure 7a, Item 206) and a fastening element (Figure 7a, Item 702) which is larger than the CCD cell that allows a user to make adjustments after the prism assembly has been bonded (c. 7, ll. 57-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt the mounting method of Heffington to the structure of Andrevski to allow the user to adjust the CCD cells after they have been bonded to the prism assembly.

[claim 19]

In regard to claim 19, note that Andrevski discloses gluing the fastening element to the prism housing with a glue (i.e. in a "heat-insulating fashion") in order to make the structure rigid (Figure 7a; c. 7, ll. 54-60).

[claim 22]

In regard to claim 22, note that Heffington discloses allowing the first glue to harden prior to the alignment (c. 7, ll. 16-38).

[claim 25]

In regard to claim 25, Heffington in view of Andrevski discloses all limitations except for a first glue with a heat transfer coefficient on at least 0.6 W/m-K. Official Notice is taken that it is well known in the art to mount CCD cells using glues with high

heat transfer coefficients to aid in cooling the CCD cell. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a first glue with a heat transfer coefficient of at least 0.6 W/m-K.

[claim 26]

In regard to claim 26, note that Heffington in view of Andrevski discloses all limitations except for a third glue with a heat transfer coefficient of no more than 0.3 W/m-K. Official Notice is taken that it is well known in the art to mount prisms using glues which low heat transfer coefficients to avoid problems caused by thermal expansion of the prism. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a third glue with a heat transfer coefficient of no more than 0.3 W/m-K.

Allowable Subject Matter

9. Claims 3, 5, 8, 10, 12-14, 17, 18, 20, 21, 23, 24, 27, 28, 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

[claims 3 and 14]

In regard to claims 3 and 14, the prior art does not teach or fairly suggest one or several Peltier elements, which is/are in surface contact with the heat distribution pieces defined in claim 2 in order to reduce the temperature differences between the joining construction components and the prism. Although the use of Peltier elements to cool

CCD cells is known in the art, the specific connection claimed is not known.

[claim 5]

In regard to claim 5, the prior art does not teach or fairly suggest heat distribution pieces that extend along the back side of the fastening element defined in claim 1, whereupon each fastening element is further attached to said heat distribution pieces by second glue joints.

[claims 8 and 10]

In regard to claims 8 and 10, the prior art does not teach or fairly suggest heat-insulating elements which are a fourth glue joint and/or a combination of an insulating layer and screws

[claims 12 and 13]

In regard to claims 12 and 13, the prior art does not teach or fairly suggest a fastening element defined in claim 6 wherein in cross-section the fastening element of the CCD cell has the shape of a right-angled]-profile that opens towards the prism, at the center of which profile the CCD cell is attached, and the end branches of said profile form said front surfaces.

[claims 17, 21, 30 and 31]

In regard to claims 17, 21, 30 and 31, the prior art does not teach or fairly suggest a method defined in claim 16 further comprising the steps of: creating a thermally conductive surface contact between heat distribution pieces and the ends of the fastening element by joining them together with a second glue; and attaching the heat distribution pieces to the prism housing in a heat-insulating fashion and in order to

make the structure rigid.

[claims 18, 23 and 27]

In regard to claims 18, 23 and 27, the prior art does not teach or fairly suggest a method defined in claim 16 further comprising the steps of: creating a thermally conductive surface contact between heat distribution pieces and the back side of the fastening element by joining them together with a second glue; and attaching the heat distribution pieces to the prism housing in a heat-insulating fashion and in order to make the structure rigid.

[claim 20]

In regard to claim 20, the prior art does not teach or fairly suggest a method defined in claim 16 further comprising the step of fastening the extensions of the fastening element to the prism housing in a heat-insulating fashion and in order to make the structure rigid. Although the use of Peltier elements to cool CCD cells is known in the art, the specific connection claimed is not known.

[claims 24 and 28]

In regard to claims 24 and 28, the prior art does not teach or fairly suggest a method defined in claim 16 wherein heat distribution pieces and fastening element extensions are attached to the prism housing: with a fourth thermally insulating glue; or by arranging an insulation between the heat distribution pieces and the prism housing, and by fastening the heat distribution pieces to the housing by mechanical fastening elements.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art further shows the current state of the art in CCD cells attached to prisms:

- | | | |
|------|-----------------|----------------|
| i. | Yamamoto et al. | US 4,916,529 |
| ii. | Yamamoto | US 5,042,913 |
| iii. | Ohmuro | US 5,134,468 |
| iv. | Morita et al. | JP 61-118707 A |
| v. | Ishida et al. | JP 08-322055 A |
| vi. | Horiguchi | JP 10-234049 A |

The following prior art shows the current state of the art in cooling CCD cells with Peltier coolers:

- | | | |
|-----|------------------|--------------|
| i. | Miyaguchi et al. | US 5,508,740 |
| ii. | Yoshida | US 6,307,590 |

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J Henn whose telephone number is (703) 305-8327. The examiner can normally be reached on M-F 7:30 AM - 5:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJH
9/1/2004



TUAN HO
PRIMARY EXAMINER